



This document is scheduled to be published in the Federal Register on 10/23/2012 and available online at <http://federalregister.gov/a/2012-26095>, and on FDsys.gov

[Billing Code 4140-01-P]

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Government-Owned Inventions; Availability for Licensing

AGENCY: National Institutes of Health, Public Health Service, HHS

ACTION: Notice

SUMMARY: The inventions listed below are owned by an agency of the U.S.

Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally-funded research and development. Foreign patent applications are filed on selected inventions to extend market coverage for companies and may also be available for licensing.

FOR FURTHER INFORMATION: Licensing information and copies of the U.S. patent applications listed below may be obtained by writing to the indicated licensing contact at the Office of Technology Transfer, National Institutes of Health, 6011 Executive Boulevard, Suite 325, Rockville, Maryland 20852-3804; telephone: 301-496-7057; fax: 301-402-0220. A signed Confidential Disclosure Agreement will be required to receive copies of the patent applications.

Zuma Mutant Mice as a Tool for Investigating Mammalian Developmental Defects

Description of Technology: In vertebrates, mutations in different ribosomal protein subunits result in a variety of phenotypes, suggesting unique and perhaps extra-ribosomal functions for these proteins. Diamond-Blackfan Anemia (DBA) is a ribosomal protein disease, in which the bone marrow fails to produce red blood cells.

NHGRI investigators recently generated a mouse line with a mutation in small ribosomal protein7 (Rps7), known to be involved in DBA. This line named Zuma (made with the use of the mutagen N-ethyl-N-nitrosourea (ENU)) carries a point mutation in exon 7 of Rps7, which is predicted to cause a substitution of a conserved amino acid (pY177S). The mutation results in the disruption of ribosomal biogenesis, as well as in abnormal skeletal, melanocyte, and central nervous system development. Thus, the Zuma line can be used as a model of DBA, as well as a tool for investigating other defects of mammalian development.

Potential Commercial Applications:

- Animal model of Diamond-Blackfan Anemia (DBA)
- Research tool to study other mammalian developmental defects

Competitive Advantages: Not available elsewhere

Development Stage:

- Prototype
- Pre-clinical
- In vitro data available

Inventors: William J. Pavan and Dawn Watkins Chow (NHGRI)

Publication: Manuscript submitted

Intellectual Property: HHS Reference No. E-294-2012/0 — Research Tool.

Patent protection is not being pursued for this technology.

Licensing Contact: Betty B. Tong, Ph.D.; 301-594-6565; tongb@mail.nih.gov

Collaborative Research Opportunity: The Mouse Embryology Section of the National Human Genome Research Institute is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate, or commercialize Diamond-Blackfan Anemia therapies. For collaboration opportunities, please contact Claire T. Driscoll, Director, NHGRI Technology Transfer Office, at cdriscoll@mail.nih.gov or 301-594-2235.

Magnetic Resonance Arterial Wall Imaging Methods that Compensate for Patient Aperiodic Intrinsic Cardiac, Chest Wall, and Blood Flow-Induced Motions

Description of Technology: The technology includes MRI methods, systems, and software for reliably imaging vasculature and vascular wall thickness while compensating for aperiodic intrinsic motion of a patient during respiration. To overcome the loss of the orthogonality due to uncompensated residual motions and after a lapse of time equal to the trigger delay commenced at the cardiac cycle, the system acquires multiple consecutive time-resolved images of the arterial wall. The cine images are processed offline and a wall thickness measurement is produced.

The method improves arterial wall imaging by increasing the success rate of obtaining good and excellent quality images and imaging slice-vessel orthogonality. The method also provides more precise wall measurements and a more distinct difference between healthy subjects and patients.

The methodology and system can be applied to any commercially available MRI scanner.

Potential Commercial Applications:

- early detection of vascular disease,
- research in the field of vascular disease,
- non-invasive assessment of the efficacy of medication and/or lifestyle changes in vascular health status in a particular subject, and
- assessment of the efficacy of new medications or new uses of existing medications to treat vascular disease.

Competitive Advantages: Existing techniques suffer from image degradation due to aperiodic intrinsic cardiac, chest wall motions, or other bulk motion that often cause image blur and reduced wall sharpness. These techniques do not adequately address the time-dependent angular orientation of the arteries, whereby mispositioning of the imaged slice may cause disappearance of the lumen-wall interface altogether.

In the new technology time-resolved arterial wall imaging overcomes the loss of the orthogonality due to uncompensated residual motion.

Development Stage:

- Prototype
- Early-stage
- Pre-clinical
- In vivo data available (human)

Inventors: Khaled Z. Abd-Elmoniem (NIDDK), Ahmed Gharib (NIDDK), Roderic Pettigrew (NIBIB)

Publications:

1. Plein S, et al. Three-dimensional coronary MR angiography performed with subject-specific cardiac acquisition windows and motion-adapted respiratory gating. *AJR Am J Roentgenol.* 2003 Feb;180(2):505-12. [PMID 12540462]
2. Hoffmann MH, et al. Automatic determination of minimal cardiac motion phases for computed tomography imaging: initial experience. *Eur Radiol.* 2006 Feb;16(2):365-73. [PMID 16021450]
3. Ustun A, et al. Automated identification of minimal myocardial motion for improved image quality on MR angiography at 3 T. *AJR Am J Roentgenol.* 2007 Mar;188(3):W283-90. [PMID 17312038]
4. Roes SD, et al. Correction for heart rate variability during 3D whole heart MR coronary angiography. *J Magn Reson Imaging.* 2008 May;27(5):1046-53. [PMID 18425831]
5. Abd-Elmoniem KZ, et al. Phase-sensitive black-blood coronary vessel wall imaging. *Magn Reson Med.* 2010 Apr;63(4):1021-30. [PMID 20373403]
6. Spuentrup E, et al. The impact of navigator timing parameters and navigator spatial resolution on 3D coronary magnetic resonance angiography. *J Magn Reson Imaging.* 2001 Sep;14(3):311-8. [PMID 11536409]

Intellectual Property: HHS Reference No. E-185-2012/0 — U.S. Provisional Application No. 61/692,191 filed 22 Aug 2012

Licensing Contact: Michael Shmilovich; 301-435-5019;
shmilovm@mail.nih.gov

Collaborative Research Opportunity: The Biomedical and Metabolic Imaging Branch, NIDDK, NIH, is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate, or commercialize time-resolved arterial wall imaging. For collaboration opportunities, please contact Khaled Z. Abd-Elmoniem at abdelmoniemkz@mail.nih.gov.

Topical Antibiotic with Immune Stimulating Oligodeoxynucleotide Molecules to Speed Wound Healing

Description of Technology: The present technology provides a mean of improving the activity of topical antibiotics. Currently available topical antibiotic formulations effectively eliminate bacteria at a wound site. But in eliminating bacteria in the wound, such antibiotics also eliminate the molecular signals present in bacterial DNA that stimulate to immune system's wound healing processes. Without these signals the rate of wound healing is diminished. It would be desirable for topical antibiotics to remove infectious bacteria but also provide the immune stimulating signals needed to promote and accelerate healing. The present formulation accomplishes these goals by supplementing the antibiotic formulation with immunostimulatory oligodeoxynucleotides (ODN). These ODN express the CpG motifs present in bacterial DNA and safely mimic the immune stimulation induced by bacterial DNA. The formulation may be applied directly to a wide variety of wounds to skin (such as traumatic, burn, or surgical wound), or the eyes (such as corneal abrasions) to effectively eliminate infection and stimulate rapid healing of the wound.

Potential Commercial Applications: Topical antibiotic

Competitive Advantages: Eliminates wound site bacteria while retaining immune stimulating properties that promote faster wound healing

Development Stage:

- Early-stage
- In vivo data available (animal)

Inventors: Dennis Klinman, Hiroyasu Ito, Noriho Iida (all of NCI)

Publications:

1. Ito H, et al. Antibiotics delay wound healing: an effect reversed by co-administering TLR7 and 9 ligands. *Current Angiogenesis*. 2012 Apr;1(1):46-51.
2. Sato T, et al. Accelerated wound healing mediated by activation of Toll-like receptor 9. *Wound Repair Regen*. 2010 Nov-Dec;18(6):586-93. [PMID 20946144]
3. Yamamoto M, et al. The acceleration of wound healing in primates by the local administration of immunostimulatory CpG oligonucleotides. *Biomaterials*. 2011 Jun;32(18):4238-42. [PMID 21421264]

Intellectual Property: HHS Reference No. E-294-2011/0 — U.S. Provisional Application No. 61/639,688 filed 27 Apr 2012

Related Technology: HHS Reference No. E-242-2007/0 — U.S. Patent Application No. 12/205,756 filed 05 Sep 2008

Licensing Contact: Edward (Tedd) Fenn; 301-435-5031; fenned@mail.nih.gov

Collaborative Research Opportunity: The National Cancer Institute is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate, or commercialize adding immunostimulatory CpG

oligonucleotides to a topical antibiotic formulation to accelerate wound healing. For collaboration opportunities, please contact John Hewes, Ph.D. at hewesj@mail.nih.gov.

Antimalarial Inhibitors that Target the Plasmodial Surface Anion Channel (PSAC)

Protein and Development of the PSAC Protein as Vaccine Targets

Description of Technology: There are two related technologies, the first being small molecule inhibitors of the malarial plasmodial surface anion channel (PSAC) and the second being the PSAC protein itself as a vaccine candidate. The PSAC protein is produced by the malaria parasite within host erythrocytes and is crucial for mediating nutrient uptake. In vitro data show that the PSAC inhibitors are able to inhibit growth of malaria parasites, have high specificity, and low toxicity. Portions of the PSAC protein are found on the outer surface of infected host erythrocytes and the protein was recently shown to be encoded by the *clag3* gene. This discovery opens the possibility of developing the PSAC protein as a potential vaccine candidate against malaria.

Potential Commercial Applications:

- Antimalarial Drugs
- Malaria Vaccine

Competitive Advantages:

- Novel target against malaria
- Small molecule inhibitors of PSAC inhibit malarial parasite growth, have low toxicity, and high specificity
- PSAC protein is exposed on the surface of the infected host erythrocytes, making it an attractive vaccine candidate

Development Stage:

- Early-stage
- Pre-clinical
- In vitro data available

Inventor: Sanjay Desai (NIAID)

Publications:

1. Pillai AD, et al. Solute restriction reveals an essential role for clag3-associated channels in malaria parasite nutrient acquisition. *Mol Pharmacol.* 2012 Sep 4; Epub ahead of print. [PMID 22949525]
2. Desai SA. Ion and nutrient uptake by malaria parasite-infected erythrocytes. *Cell Microbiol.* 2012 Jul;14(7):1003-9. [PMID 22432505]
3. Nguitragool W, et al. Malaria parasite clag3 genes determine channel-mediated nutrient uptake by infected red blood cells. *Cell.* 2011 May 27;145(5):665-77. [PMID 21620134]
4. Pillai AD, et al. A cell-based high-throughput screen validates the plasmodial surface anion channel as an antimalarial target. *Mol Pharmacol.* 2010 May;77(5):724-33. [PMID 20101003]

Intellectual Property: HHS Reference No. E-145-2011/0 — International PCT Patent Application No. PCT/US12/33072 filed 11 Apr 2012

Related Technology: HHS Reference No. E-202-2008/0 — Patent family filed in the U.S., Europe, Brazil, India, and China

Licensing Contact: Kevin W. Chang, Ph.D.; 301-435-5018;

changke@mail.nih.gov

Collaborative Research Opportunity: The National Institute of Allergy and Infectious Diseases is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate, or commercialize Antimalarial Inhibitors that Target the Plasmodial Surface Anion Channel (PSAC) Protein. For collaboration opportunities, please contact Dana Hsu at dhsu@niaid.nih.gov or 301-451-3521.

Fluorescent Magnesium Indicators

Description of Technology: A non-invasive approach in which Magnesium (Mg^{2+}) ion levels can be measured in real-time. Mg^{2+} is essential to many physio-chemical processes and plays a central role in the biochemistry of all cells. Many epidemiological studies have established close association between plasma magnesium levels and various diseases including cardiovascular disease and hypertension. However, methods and tools to selectively measure cellular magnesium levels in the body with accuracy and reliability are still lacking in the market today. The present invention provides novel fluorescent indicators (carboxy-quinolizones) that are selective for Mg^{2+} and can be easily detected using fluorescence spectroscopy.

Current approaches used to measure intracellular magnesium in the body generally involve magnetic resonance spectroscopy, which is extremely expensive and subject to very poor accuracy. Unlike these other methods, the fluorescence indicators of this invention provide a more accurate way to measure intracellular and extracellular Mg^{2+} levels in a wide variety of biological settings and have potential to be developed into diagnostic reagents.

Potential Commercial Applications:

- tool for measuring intracellular and extracellular magnesium levels
- diagnostic reagent for measuring magnesium levels in a human or animal

Competitive Advantages:

- increased accuracy compared to what is available on the market
- detection is noninvasive
- ease of use

Development Stage:

- Early-stage
- In vitro data available

Inventors: Robert E London, Pieter Otten, Louis A Levy (all of NIEHS)

Publications:

1. Raju B, et al. A fluorescent indicator for measuring cytosolic free magnesium. Am J Physiol. 1989 Mar;256(3 Pt 1):C540-8. [PMID 2923192]
2. Otten PA, et al. 4-Oxo-4H-quinolizine-3-carboxylic acids as Mg²⁺-selective, fluorescent indicators. Bioconjugate Chem. 2001 Mar-Apr;12(2):203-12. [PMID 11312681]

Intellectual Property: HHS Reference No. E-067-2000/0 — U.S. Patent No. 6,706,528 issued 16 Mar 2004

Licensing Contact: Suryanarayana Vepa, Ph.D., J.D.; 301-435-5020;
vepas@mail.nih.gov

Collaborative Research Opportunity: The NIEHS is seeking statements of capability or interest from parties interested in collaborative research to further develop,

evaluate, or commercialize the fluorescent magnesium indicators. For collaboration opportunities, please contact Elizabeth M. Denholm, Ph.D. at denholme@niehs.nih.gov.

October 18, 2012

Date

Richard U. Rodriguez,
Director
Division of Technology Development and Transfer
Office of Technology Transfer
National Institutes of Health

[FR Doc. 2012-26095 Filed 10/22/2012 at 8:45 am; Publication Date: 10/23/2012]